

# GRANT ROAD REVERSIBLE LANE



April 2004

# BEGINNING

## Grant Road Reversible

Established February 1981



# ADVANTAGES

- Extra capacity is provided in the direction and time needed. Both AM and PM peaks can be accommodated on the same street.
- Enhanced green due to the omitted left turns.



# DISADVANTAGES

- A recent study indicates that over time more accidents occur.
- Additional cost for sign maintenance.
- Need for additional enforcement.
- Left turn restriction leads to neighborhood traffic intrusion.
- Business access is impaired by the left turn restriction in AM and PM.
- Confusing to some motorists.



# WHO'S USING IT:

## *Morning Examples*

Direction	Thru	R/L	Total	Split	Count Location
EB	2404		2404	48%	Between 6 <sup>th</sup> & 1st
WB	2046	520	2566	52%	
EB	2059		2059	42%	Between Tucson & Country Club
WB	2143	736	2879	58%	
EB	2134		2134	40%	Between Alvernon & Columbus
WB	2340	831	3171	60%	



Date of count 03/05/2003

# WHO'S USING IT:

## *Evening Examples*

Direction	Thru	R/L	Total	Split	Count Location
EB	2355	309	2664	52%	Between 6 <sup>th</sup> & 1st
WB	2479		2479	48%	
EB	2320	858	3178	56%	Between Tucson & Country Club
WB	2543		2543	44%	
EB	2886	743	3629	58%	Between Alvernon & Columbus
WB	2594		2594	42%	



Date of count 03/05/2003

# JUSTIFIED?



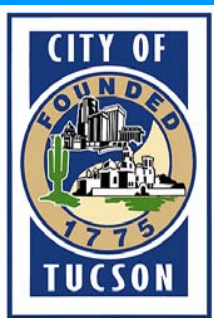
Reverse-flow operation on undivided streets generally is justified where 65% or more of the traffic moves in one direction during peak periods.



# CONGESTION IS INCREASING

## *Grant/Campbell Intersection*

		1978	2002	% Increase
WB	AM	2183	3047	+ 40%
	MID	1989	2792	+ 40%
	PM	1899	2786	+ 47%
EB	AM	1620	2274	+ 40%
	MID	2255	2691	+ 19%
	PM	3140	3224	+ 3%





# GRANT ROAD INTERSECTIONS:

*With & Without*

Intersection Name	With Reversible Lane		Without Reversible Lane		Delay Increase at Major Signals (%)
	Level of Service	Delay (sec)	Level of Service	Delay (sec)	
Grant & Oracle	D	38.7	D	38.7	N/A
Grant & Stone	D	39.9	D	39.6	N/A
Grant & 6 <sup>th</sup>	A	6.7	A	7.8	+16.4
Grant & 1 <sup>st</sup>	D	35.1	F	95.8	+172.9
Grant & Park	B	11.7	B	12.5	+6.8
Grant & Mountain	A	9.8	B	13.5	+37.8
Grant & Campbell	C	24.5	F	84.0	+242.9
Grant & Tucson	B	14.8	E	62.7	+323.6
Grant & Country Club	C	26.2	F	81.0	+209.2
Grant & Dodge	B	12.1	C	24.0	+98.3
Grant & Alvernon	E	78.7	F	165.3	+110.0
Grant & Columbus	B	12.3	C	22.2	+80.5
Grant & Swan	E	60.4	E	59.6	N/A



# POSITIVE EFFECTS OF REVERSIBLE

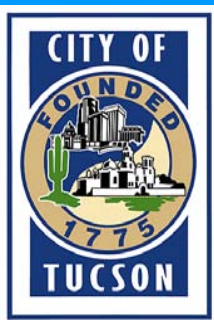
Network Statistics	With Reversible Lane	Without Reversible Lane	% Change
Travel Time (hr)	1942.6	3283.7 ↑	+69.0
Total Delay (hr)	1299.4	2674.4 ↑	+105.8
Delay / Vehicle (sec)	182.4	386.8 ↑	+112.1
Total Stops	50187	81503 ↑	+62.4
Fuel Used (gal)	2285.9	2918.8 ↑	+27.7
HC Emissions (g)	6173	7721 ↑	+25.1
CO Emissions (g)	219526	225223 ↑	+2.6
NOx Emissions (g)	17696	19370 ↑	+9.5



Removal of the reversible will  
impact air quality and increase user costs.

# NATIONAL RECOGNITION

The Grant Road reversible lane in Tucson has become the national standard.



# CRASHES:

## *Before & After*

### *Broadway Blvd.*

Year	Total Accidents	% Decrease
With reversible 1998-2001	133	22%
Without reversible 2001-2004	104	



Data collected three years before  
and three years after closing reversible lane

# BROADWAY & CAMPBELL

*Now Most  
Congested Intersection*

## Top Five Congested Intersections

	1999	2000	2001	2002
INTERSECTION	LOS	LOS	LOS	LOS
Broadway/Campbell	C	C	E	F
OrangeGrove/Thornydale	n/a	n/a	n/a	E
Speedway/Swan	D	E	D	E
Grant/Craycroft	D	D	E	D
Grant/Swan	D	D	E	D

Source: PAG



# GRANT CARRIES MORE TRAFFIC THAN BROADWAY

Roadway	Traffic Volume*
Grant Road	54
Speedway Boulevard	57
Broadway Boulevard	47

\*Thousands of vehicles/day

Grant Road signals have lower capacity with fewer turn bays than other major streets.



Volume is Number x 1000 vehicles / day

# SO LET'S COMPARE



# IF THE GRANT REVERSIBLE LANE STAYS

- Accident numbers will remain the same.
- Grant Road will work like it does today.
- Continued neighborhood cut-through traffic caused by left-turn restriction.
- Continued confusion for motorists.
- Continued business access problems in AM & PM.





# IF THE GRANT REVERSIBLE LANE IS REMOVED

- Accidents will likely decrease over time.
- Grant Road intersections will become more congested.
- Increased cut-through traffic on residential streets to avoid this congestion.
- Less motorist confusion.
- Improved business and neighborhood access during peak hours.
- Removing extraneous signals becomes more important.



# COST FOR REMOVAL

- \$35,000 for the removal of lights and signs.
- \$12,000,000 to improve the 6 most congested intersections.
- \$100,000,000 to widen Grant to three lanes each way from Swan to Stone.



On April 19, 2004  
The Mayor and Council voted 7-0 to  
permanently remove the Grant Road  
reversible lane operation.

The changes in the reversible lane  
operation will officially occur in June  
2004. The exact date has not been  
determined.



April 2004